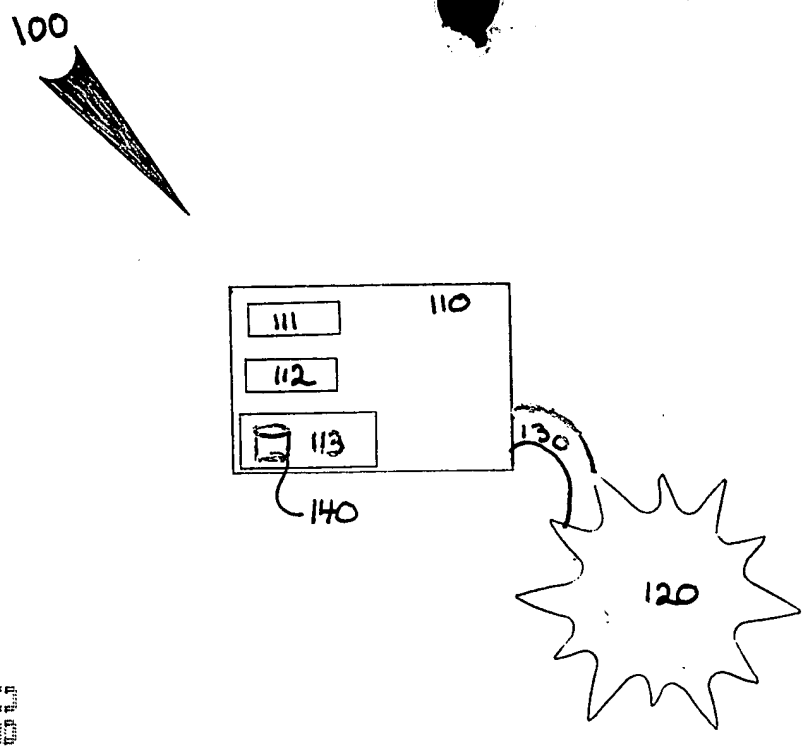

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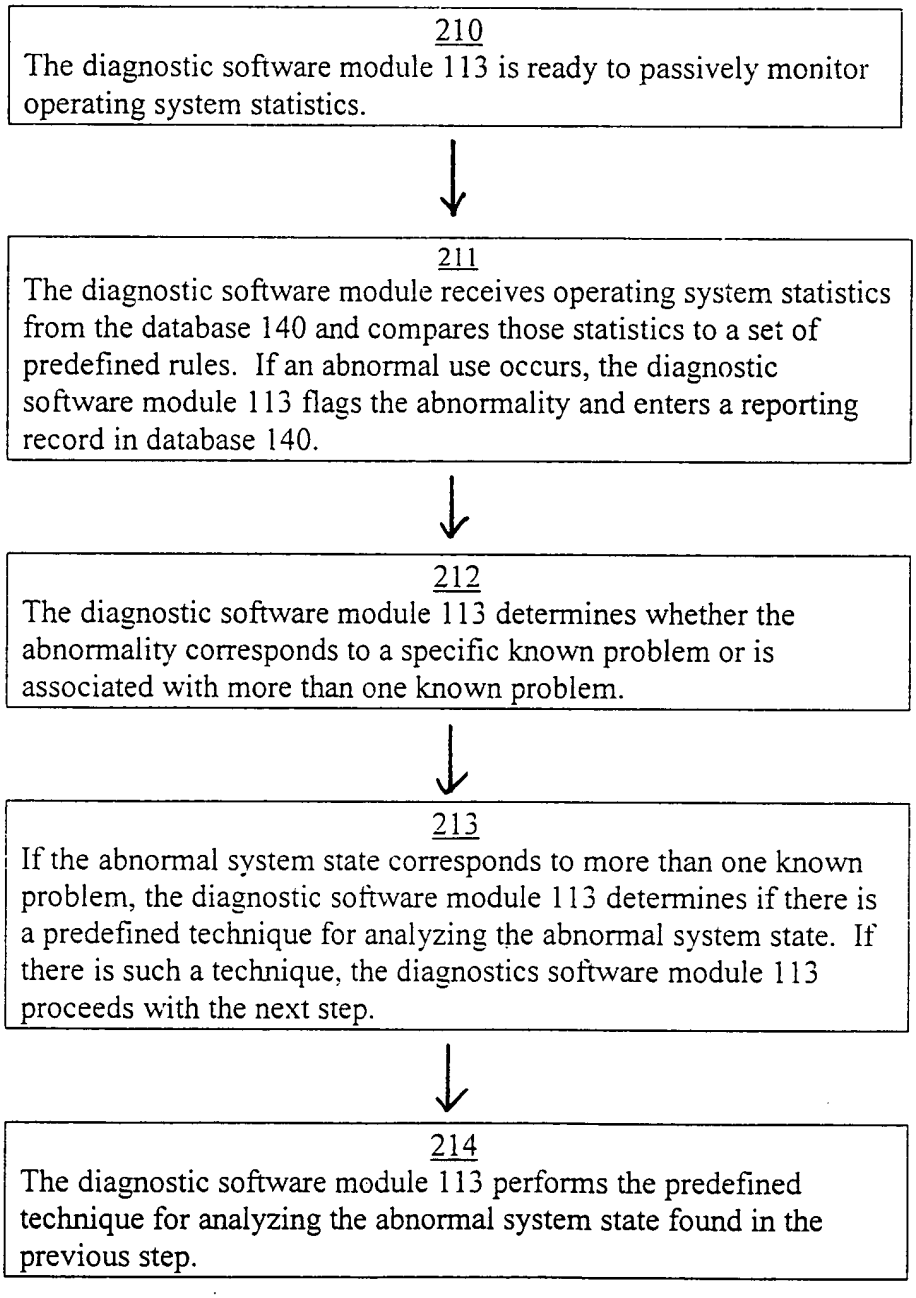
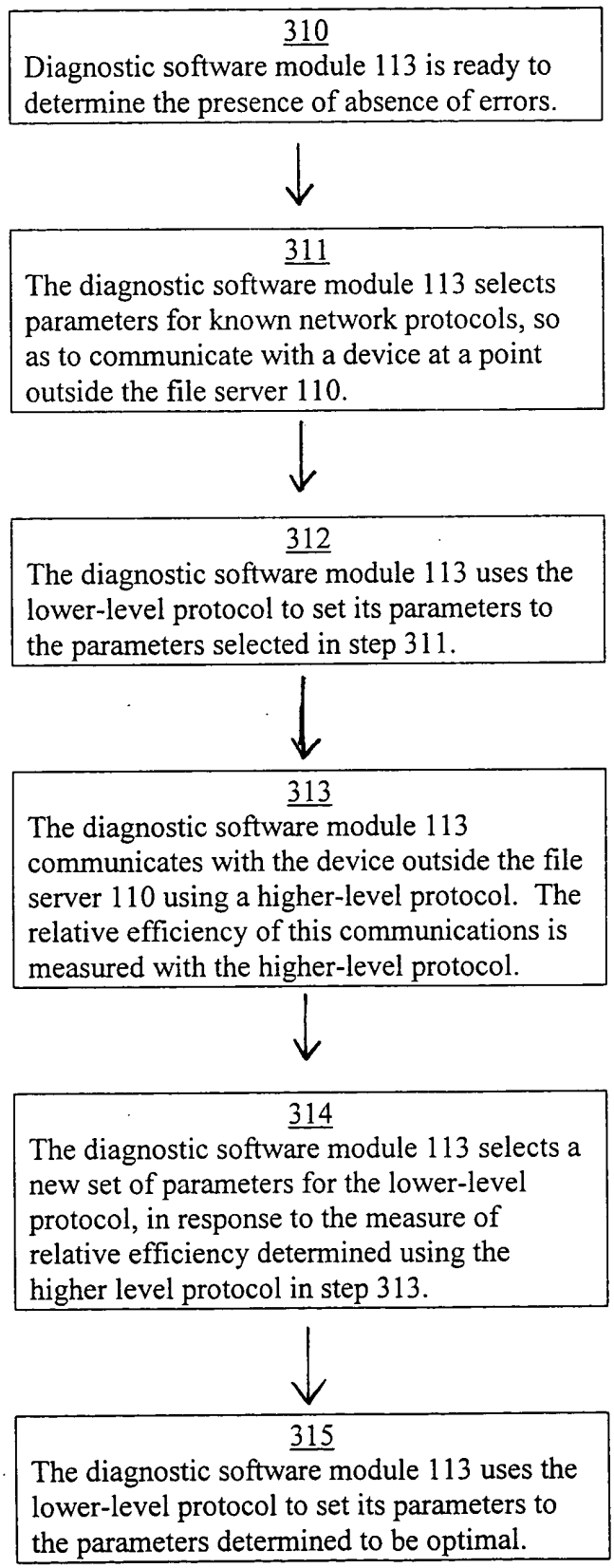
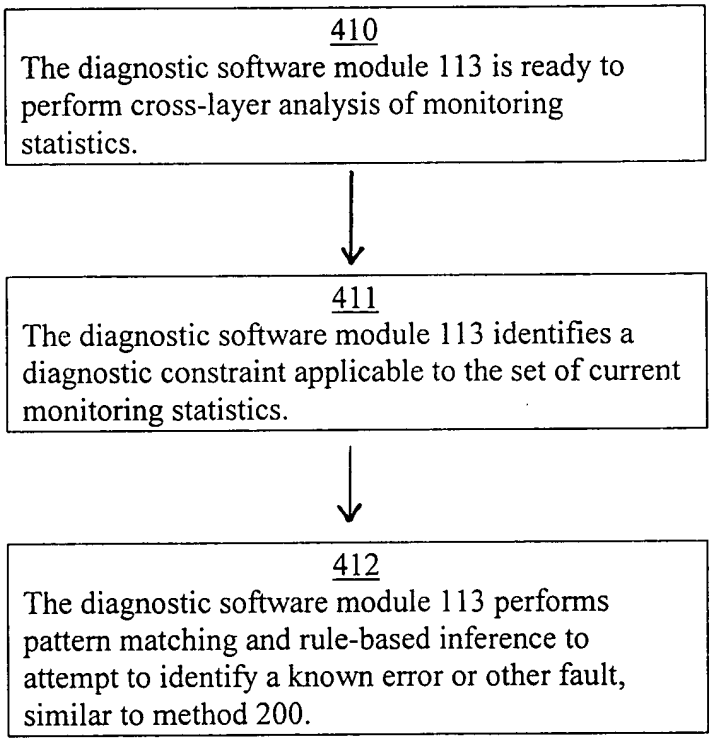
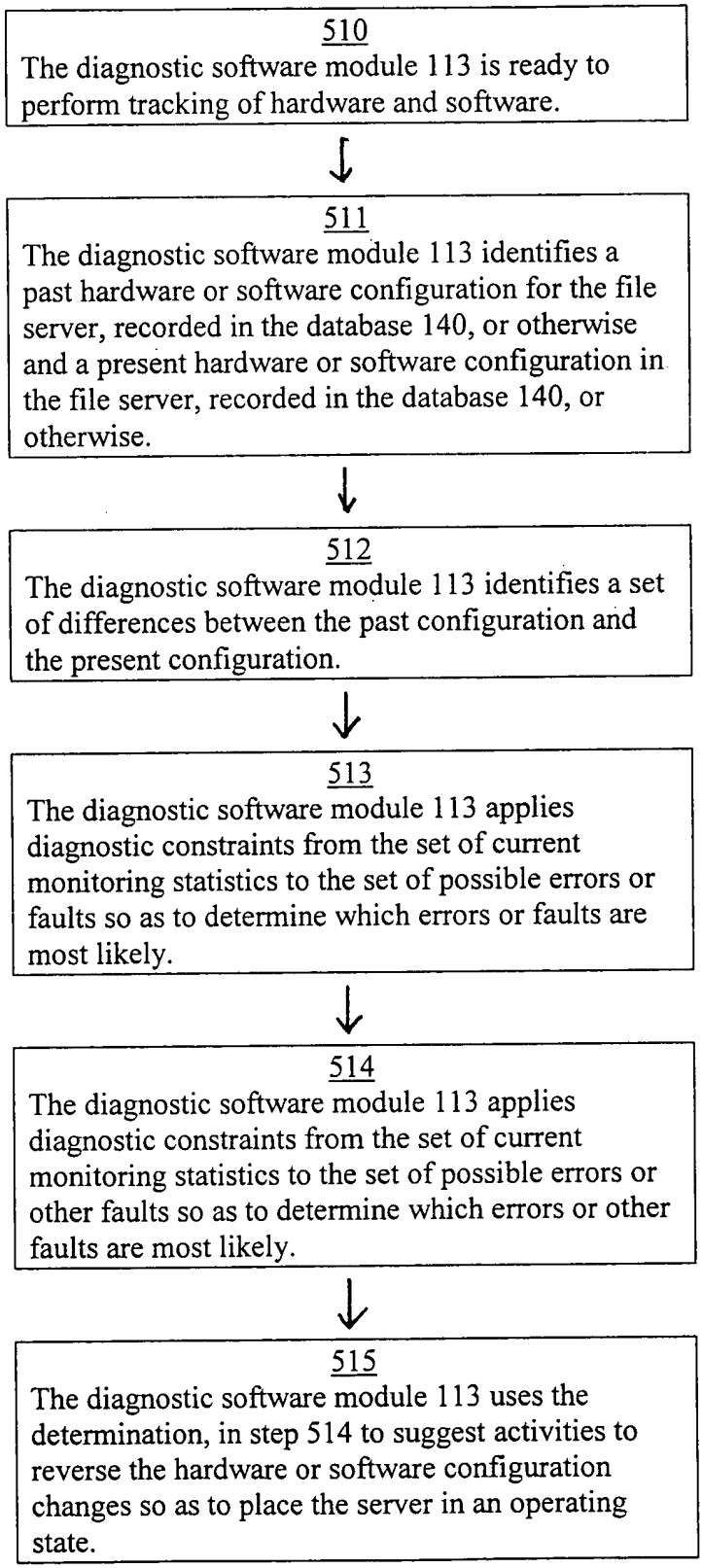

210
The diagnostic software module 113 is ready to passively monitor operating system statistics.
211
The diagnostic software module receives operating system statistics from the database 140 and compares those statistics to a set of predefined rules. If an abnormal use occurs, the diagnostic software module 113 flags the abnormality and enters a reporting record in database 140.
212
The diagnostic software module 113 determines whether the abnormality corresponds to a specific known problem or is associated with more than one known problem.
213
If the abnormal system state corresponds to more than one known problem, the diagnostic software module 113 determines if there is a predefined technique for analyzing the abnormal system state. If there is such a technique, the diagnostics software module 113 proceeds with the next step.
214
The diagnostic software module 113 performs the predefined technique for analyzing the abnormal system state found in the previous step.


310
Diagnostic software module 113 is ready to determine the presence of absence of errors.
311
The diagnostic software module 113 selects parameters for known network protocols, so as to communicate with a device at a point outside the file server 110.
312
The diagnostic software module 113 uses the lower-level protocol to set its parameters to the parameters selected in step 311.
313
The diagnostic software module 113 communicates with the device outside the file server 110 using a higher-level protocol. The relative efficiency of this communications is measured with the higher-level protocol.
314
The diagnostic software module 113 selects a new set of parameters for the lower-level protocol, in response to the measure of relative efficiency determined using the higher level protocol in step 313.
315
The diagnostic software module 113 uses the lower-level protocol to set its parameters to the parameters determined to be optimal.


410
The diagnostic software module 113 is ready to perform cross-layer analysis of monitoring statistics.
411
The diagnostic software module 113 identifies a diagnostic constraint applicable to the set of current monitoring statistics.
412
The diagnostic software module 113 performs pattern matching and rule-based inference to attempt to identify a known error or other fault, similar to method 200.


510
The diagnostic software module 113 is ready to perform tracking of hardware and software.
511
The diagnostic software module 113 identifies a past hardware or software configuration for the file server, recorded in the database 140, or otherwise and a present hardware or software configuration in the file server, recorded in the database 140, or otherwise.
512
The diagnostic software module 113 identifies a set of differences between the past configuration and the present configuration.
513
The diagnostic software module 113 applies diagnostic constraints from the set of current monitoring statistics to the set of possible errors or faults so as to determine which errors or faults are most likely.
514
The diagnostic software module 113 applies diagnostic constraints from the set of current monitoring statistics to the set of possible errors or other faults so as to determine which errors or other faults are most likely.
515
The diagnostic software module 113 uses the determination, in step 514 to suggest activities to reverse the hardware or software configuration changes so as to place the server in an operating state.